A taxonomic revision of the genus *Platycola* (Ciliophora: Peritrichida)

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Introduction

Platycola Kent, 1882 is a loricated ciliate belonging to the order Peritrichida Stein, 1859. When the genus was erected it consisted of eight species, and in the past century seventeen new species have been added. However, in that time there has been only one review of the genus (Kahl, 1935), and one account of its general biology (Kralik, 1961). In view of this, it was considered that another review of the genus *Platycola* was long overdue.

Like Trueba (1978) in his revision of the genus *Pyxicola* (Ciliophora: Peritrichida), the present author has imitated Noland and Finley's (1931) revision of the genus *Vorticella*. In so doing, the original descriptions of all twenty five species of *Platycola* have been compared. As a result, only thirteen species are recognised as valid while the rest are either considered to be synonymies or removed from the genus altogether. Drawings and descriptions of the thirteen recognised species are included together with a key to their identification.

General morphology and biology

A relatively modern account of the biology of a representative species of *Platycola* is given in Kralik (1961) so it is sufficient here to give a short summary. Typically, *Platycola* consists of one, two or sometimes more zooids within a decumbent lorica which has an aperture in the anterior region. The exact chemical nature of the peritrich lorica is not known and is usually called 'chitin', 'pseudochitin' or 'tectin' although Sleigh (1973) considered it most likely to be either a proteinaceous or mucopolysaccharide secretion. It is usually colourless or pale yellow when first formed but becoming dark yellow or brown with age, probably due to the deposition of iron on the surface (Kralik, 1961).

The zooid is usually trumpet-shaped or cylindrical and, when relaxed, may extend far beyond the aperture. When stimulated, it contracts quickly back into the lorica. As with most peritrichs, the ciliation is reduced to the three rows of peristomail cilia one outer (the haplokinety) and two inner (the polykinety). It is the beating action of these cilia which creates the feeding currents to sweep bacteria and algae down into the buccal cavity and eventually these pass into the cytoplasm where they are digested in food vacuoles. Excess water taken in by this process is pumped out of the cell by a contractile vacuole(s).

In *Platycola* there is a single macronucleus, which is usually long and conspicuous, and one micronucleus, which is small and inconspicuous. Reproduction occurs both asexually, by means of a division that is topographically longitudinal, and sexually, by conjugation which involves the fusion of a mobile microgamete with a sessile macrogamete. Both instances result in the formation of a normal vegetative parent cell and a free swimming daughter cell, or telotroch, which has an extra row of cilia near the scopular region called the aboral ciliary wreath. This enables the telotroch to swim away and colonise a new environment.

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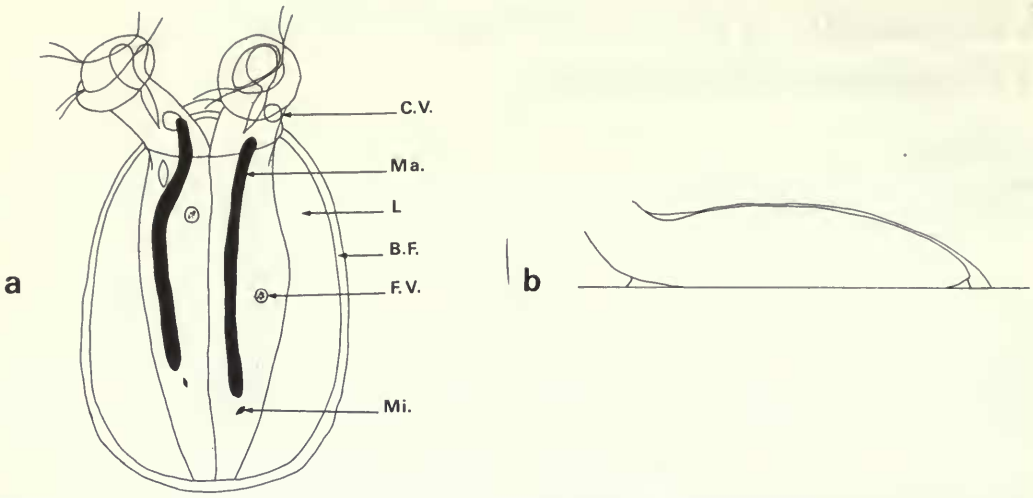

Fig. 1 *Platycola decumbens*, a. dorsal view showing two extended zooids; b. lateral view of lorica (after Kralik, 1961). B.F. = border fringe, C.V. = contractile vacuole, F.V. = food vacuole, L. = lorica, Ma. = macronucleus, Mi. = micronucleus.

The telotroch eventually settles on a substratum and immediately begins to secrete its lorica. The new lorica is slightly elastic at first and the zooid develops a conspicuous swelling near its basal region which gradually moves up towards the peristome, shaping the lorica wall as it goes. This swelling appears to be analagous to the 'growth cavity' described by Willis (1942) in the peritrich *Lagenophrys tattersalli*. When this process is complete, the swelling collapses and the zooid is reduced back to its normal size. The lorica wall now hardens and the zooid can begin to feed. Predators of *Platycola* include *Trachelophyllum chilense* (Ciliophora: Hapterida).

Taxonomic characters

There are few reliable characters on which the species of *Platycola* may be defined and ever since the genus was erected, the major reviews of Kent (1882), Kahl (1935) and Stiller (1971) have relied principally on the lorica, the substratum and, to a lesser extent, the zooid.

Lorica. In almost every species description, emphasis has been placed on the size, shape, colour, neck (length and direction) and, in one case, the striations of the lorica. However, Kralik (1961) showed that all these parameters are highly variable and concluded that the lorica alone could no longer be regarded as a reliable character on which to define a species.

Substratum. The substratum on which an individual is found is often cited as a significant part of the species description and this is especially true of the epibiotic forms. However, although there are a number of examples of species specificity among these symphoriont peritrichs (see Corliss, 1979 : 144), there is no evidence that this is true for *Platycola.* Until such evidence exists, a certain amount of reservation must be placed on the substratum as being a reliable character.

Zooid. Among the aloricate peritrichs a number of characters relating to the zooid are used to define species, for example body size and shape, position and shape of the macronucleus, number and position of contractile vacuoles and the presence of striations, but these are often omitted from species descriptions of *Platycola.* Indeed, in some cases, the only descriptions available are as a result of studies made on fixed, contracted cells, so that any information obtained relating to the zooid is of limited value. Nevertheless, these characters may be the most important and when available, are applied as such in this review.

Silver impregnations, biometric analysis and ultrastructural studies are now increasingly used in the taxonomy of both ciliates in general (Corliss, 1979) and the peritrichs in particular (Reid, 1967; Davidson & Finley, 1972; Foissner & Schiffmann, 1974, 1975, 1979; Foissner, 1978, 1979, 1981). However, the literature contains no record of any of these having been applied to *Platycola* spp. Until such information is available, we must rely on a combination of as many of the reliable characters listed above as possible, and reflect the hope of Finley and Bacon (1965) that 'perhaps there will come a time when every description of a new species of ciliate will include valid observations of such pertinent details'.

Taxonomic position and genus description

From its erection, *Platycola* Kent, 1882 has been included within the family Vaginicolidae de Fromentel, 1874 (which Kent considered to be a sub-family called Vaginicolina) and it has never been removed from that group. According to Corliss (1979), Vaginicolidae contains nine genera all of which are loricate, solitary and either with or without a stalk (generally very short when present); division is isotomic or anisotomic and some species may have a true operculum (e.g. *Pyxicola*). The genus *Platycola* has been defined by Curds *et al* (in press) as: 'body trumpet-shaped lying within a horizontal, pseudochitinous lorica to which it is attached at the posterior end. The lorica adheres along the length of one side to algae and other submerged objects by a dark, sticky substance. It has a simple aperture without valves and is turned up diagonally so that the extended animal may protrude upwards. The genus may be most easily confused with *Lagenophrys* which also has a lorica lying horizontally. However, in the latter genus, there is a complicated valve system to close the aperture and the animal is anchored laterally to the lorica'.

Key to the species of Platycola

1	Marine	2
–	Freshwater	3
2	Viewed dorsally, the lorica is circular or nearly so and, when present, the neck is short. The aperture is circular	***P. circularis*** (Fig. 5)
–	Viewed dorsally the lorica is oval and, when present, the neck is elongated. The aperture is oval	***P. hydrobiae*** (Fig. 10)
3	Zooid has one contractile vacuole	4
–	Zooid has two contractile vacuoles	***P. dilatata*** (Fig. 8)
4	Specifically epibiotic on the cave-dwelling *Microlistra spinossisima* (Crustacea: Isopoda)	5
–	When epibiotic, not found on *Microlistra spinossisima*	6
5	Macronucleus has a double loop to form an E-shape	***P. callistoma*** (Fig. 4)
–	Macronucleus ribbon-like, irregular but not E-shaped	***P. lageniformis*** (Fig. 11)
6	Not epibiotic, ventral wall follows the contour of substratum	7
–	Epibiotic, and the ventral wall depresses itself into the host substratum	***P. pala*** (Fig. 13)
7	Neck of lorica has no lateral cleft	8
–	Neck of lorica has a cleft and is 'U'-shaped when viewed laterally	***P. coelochila*** (Fig. 6)
8	Contractile vacuole situated in the upper 1/3 of the zooid, usually near the peristome lip	9
–	Contractile vacuole situated at or near the centre of the zooid	***P. baikalika*** (Fig. 2)
9	When fully extended the zooid(s) reaches well beyond the aperture	10
–	When fully extended the zooid(s) only reaches as far as or just beyond the aperture	11
10	Dorsal surface of lorica convex with no distinctive longitudinal ridge	***P. decumbens*** (Fig. 7)
–	Dorsal surface of lorica raised in a high, distinctive ridge which runs longitudinally down its centre	***P. steineri*** (Fig. 14)
11	Zooid(s) does not contain endosymbiotic zoochlorellae	12
–	Zooid(s) contains endosymbiotic zoochlorellae	***P. butschlii*** (Fig. 3)

12 Viewed dorsally, the lorica shape is irregular and asymmetrical with one side wall distinctly constricted, and the other straight . . . . . ***P. mollis*** (Fig. 12)

– Viewed dorsally the lorica shape is elliptical or nearly so, being symmetrical about its centre axis . . . . . ***P. gracilis*** (Fig. 9)

Descriptions of valid species

Thirteen of the 25 described species are recognised here to be valid. Of the remaining 12, 10 are listed below as synonyms of *Platycola* while two are transfered to other genera. *P. cylindrica* Vuxanovici, 1963 is transfered to the genus *Vaginicola* and *P. nigra* Wailes, 1928 has already been removed from the genus by Dons (1940) who considered it to be a folliculinid. In all Figs, scale: 100 μm.

Platycola baikalica Swarczewsky, 1930

Vaginicola baikalica Swarczewsky, 1930.

DIAGNOSIS (Fig. 2). The lorica is pale yellow and usually oval or circular when viewed from above. The neck is directed forwards and upwards at an angle. The dorsal wall is distinctly arched and may reach a height of up to 40 μm. Each zooid has one contractile vacuole near its centre. The ribbon-like macronucleus is long, thin and longitudinally orientated within the zooid.

Lorica 90 μm long $\times$ 67–70 μm wide. Neck 5–6 μm long $\times$ 60–65 μm wide. The neck is raised 28–30 μm above the substratum.

SUBSTRATUM. Epizooic on the gammarids: *Brandtia lata* (Crustacea: Amphipoda), *Brandtia latissima* (Crustacea: Amphipoda), *Pallasea grubei* (Crustacea: Amphipoda) and *Echinogammarus fuscus* (Crustacea: Amphipoda).

HABITAT. Freshwater in Lake Baikal.

REMARKS. This species has been described once and no diagrams showing extended zooids are available.

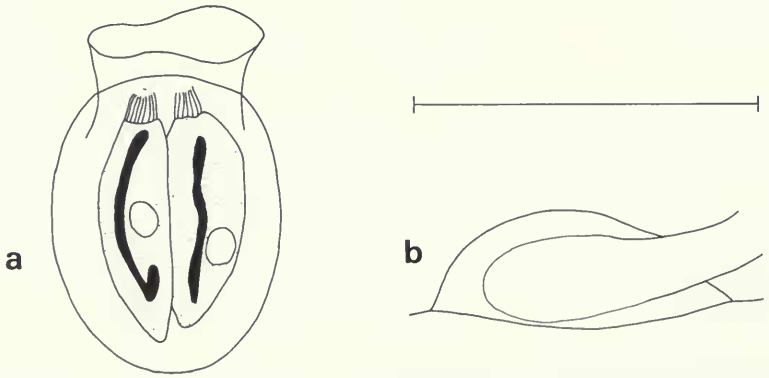

Fig. 2 *Platycola baikalica*, a. dorsal view; b. lateral view (after Swarczewsky, 1930).

Platycola butschlii Nüsslin, 1884

Vaginicola butschlii Nüsslin, 1884.

DIAGNOSIS (Fig. 3). The lorica is variable in shape but usually wide and well rounded at the base. The neck is a simple extension of the lorica wall and is distinguished by a slight constriction at its base. The wavy aperture is wide and faces upwards. The adhesive cement can be seen only around the rear 1/3 of the lorica.

The zooid is squat and contains numerous endosymbiotic zoochlorellae. The macronucleus is long and thin with two or more distinct bends (Fig. 3b).

Lorica 80–100 μm long $\times$ 54–110 μm wide. Aperture 20–40 μm wide.

SUBSTRATUM. Submerged plants and mosses.

HABITAT. Freshwater in Lake Herrenwasser.

REMARKS. The only species of *Platycola* with endosymbiotic zoochlorellae.

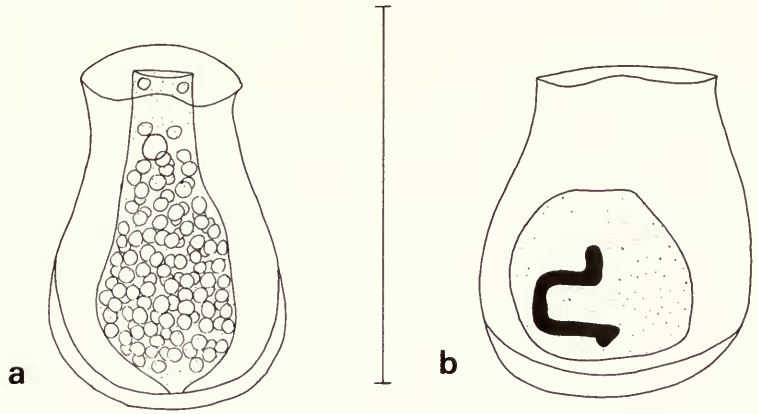

Fig. 3 *Platycola butschlii*, a. dorsal view of zooid with endosymbiotic zoochlorellae; b. dorsal view showing the macronucleus within a contracted zooid (after Nüsslin, 1884).

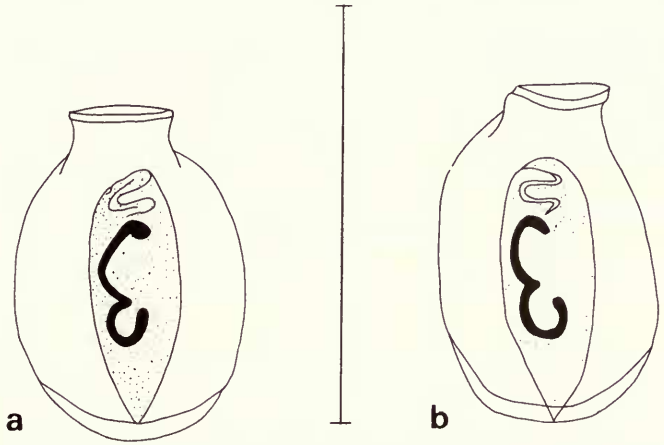

Fig. 4 *Platycola callistoma*, a. dorsal view; b. dorsal view showing variation of lorica neck (after Hadzi, 1940).

Platycola callistoma Hadzi, 1940

DIAGNOSIS (Fig. 4). The lorica is colourless and usually oval in shape when viewed dorsally. The neck is easily distinguished being slightly flattened in the dorso-ventral plane. The zooid appears to be unstriated. The macronucleus lies longitudinally in the body and has a distinctive double loop.

Lorica 73 μm long $\times$ 55 μm wide. Neck 30 μm wide at the aperture and 22 μm wide at the base. Zooid 60 μm long $\times$ 20 μm wide.

SUBSTRATUM. Epizooic on the cave-dwelling *Microlistra spinosissima* (Crustacea: Isopoda).

HABITAT. Freshwater in Yugoslavia.

REMARKS. From a single description of a contracted individual, the most distinctive characteristics of this species appear to be its substratum and macronuclear shape.

Platycola circularis Dons, 1940

DIAGNOSIS (Fig. 5). The lorica is colourless, smooth and relatively flat when viewed laterally. When viewed dorsally it is circular or nearly circular and usually without a neck. When present, the neck is very short. The macronucleus is short, sausage-shaped, slightly curved and usually situated obliquely, or at right angles to the longitudinal axis, across the centre of the zooid.

Lorica 40–65 μm in diameter. Aperture 13–16 μm wide. Neck, up to 5 μm long. Macronucleus, 30–40 μm long $\times$ 5–7 μm thick.

SUBSTRATUM. Epizooic on the uropods of *Limnoria* sp. (Crustacea: Isopoda).

HABITAT. Marine.

REMARKS. *P. circularis* has been described once and its most distinctive characteristics appear to be its circular lorica and its short, obliquely situated macronucleus. Only contracted forms were drawn and no diagrams of relaxed zooids are available.

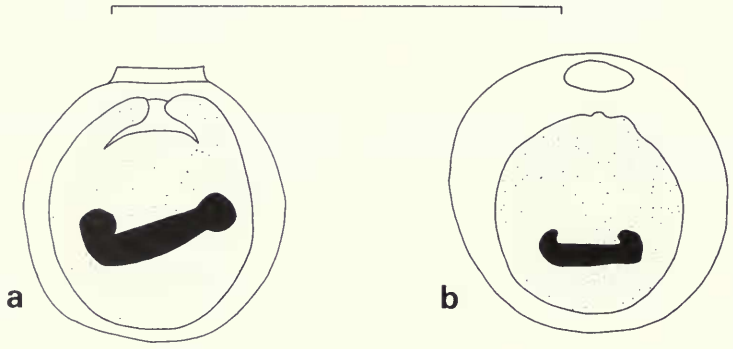

Fig. 5 *Platycola circularis*, a. dorsal view of lorica with neck; b. dorsal view of lorica without neck (after Dons, 1940).

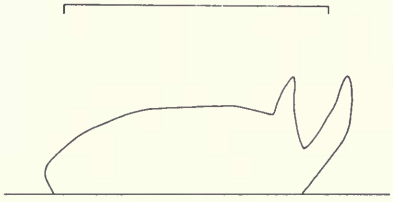

Fig. 6 *Platycola coelochila* lateral view of lorica (after Stokes, 1887).

Platycola coelochila Stokes, 1887

DIAGNOSIS (Fig. 6). Stokes (1887) described the lorica as being 'broadly ovate' from the dorsal aspect with its length less than three times the width. The posterior end is rounded and the dorsal surface convex. The short, vertical neck has a cleft, forming a 'U'-shape from the lateral view. The lorica is yellow, becoming brown with age. The zooid protrudes for a considerable distance beyond the aperture when fully extended.

Lorica 110 μm long.

SUBSTRATUM. On the roots of *Lemna* sp.

HABITAT. Freshwater from North America.

REMARKS. Stokes' (1887) diagram shows the lorica from a lateral view and without a zooid. However, until a more detailed description is available, it must remain a distinct species on the basis of the shape of its neck.

Platycola decumbens Ehrenberg, 1830

Vaginicola decumbens Ehrenberg, 1830.
Platycola ampulla de Fromentel, 1874.
Platycola regularis de Fromentel, 1874.
Platycola striata de Fromentel, 1874.
Platycola truncata de Fromentel, 1874.
Platycola longicollis Kent, 1882.
Platycola longicollis var. *intermedia* Kellicott, 1884. (=*P. intermedia* Kahl, 1935).
Platycola longicollis var. *reflexa* Mermod, 1914. (=*P. reflexa* Kahl, 1935).
Platycola amphora Swarczewsky, 1930.
Platycola amphoroides Sommer, 1951.

DIAGNOSIS (Fig. 7). The lorica varies considerably in shape (see Fig. 7) but from above, is usually oval, or rectangular with rounded corners. The colour varies from transparent or pale yellow (usually in young cells) to dark yellow or brown (usually in mature cells). Striations on the lorica are absent in most individuals though others may be either partly or completely striated. The neck length is highly variable but the aperture faces forwards and upwards. The neck is frequently colourless. There are usually two zooids in each lorica though this number may vary from one to four. One contractile vacuole is present, situated near the peristome lip. The macronucleus is long, straight and longitudinally orientated in the body. The pellicle is finely striated transversely. When relaxed the zooids extend well beyond the aperture and are usually held in a vertical position.

Lorica 65–145 μm long (average 96 μm) $\times$ 44–110 μm wide (average 75 μm). Zooid 79–168 μm long (average 142 μm) $\times$ 12–26 μm wide (average 19 μm). Peristome 21–55 μm wide (average 30 μm). Micronucleus 1·6–10·2 μm (average 3·5 μm) $\times$ 1·0–4·0 μm wide (average 1·3 μm).

SUBSTRATUM. A wide variety of plants (*Lemna* spp. *Ceratophylum* sp., various algae), animals (mollusc shells) and abiotic substrata.

HABITAT. Freshwater, widely distributed in both flowing and standing water in North America and Europe.

REMARKS. Kralik (1961) redescribed a freshwater species of *Platycola* in considerable detail which he identified as *P. truncata* de Fromentel, 1874, and among the species which he found to be synonymous with this was *P. decumbens* Ehrenberg, 1830. However, the name *P. decumbens* clearly predates that of *P. truncata*. So, in accordance with the Rules of Zoological Nomenclature (1964), *P. decumbens* should be considered the correct name and *P. truncata* a junior synonym. Of the species listed in the synonyms above, *P. reflexa* and *P. intermedia* have been synonymised here for the first time. Both were thought to be distinct on the basis of their loricae (Kahl, 1935). However, Kralik (1961) has shown the lorica of *P. truncata* (=*P. decumbens*) to be highly variable and, in the opinion of the present author, sufficiently so to encompass both of these species. Of the remainder, *P. amphora*, *P. amphoroides*, *P. longicollis*, *P. regularis* and *P. striata* were synonymised by Kralik (1961) and *P. ampulla* by Dons (1922).

Platycola dilatata de Fromentel, 1874

Vaginicola dilatata de Fromentel, 1874.
Platycola donsi Kahl, 1935.
Platycola tincta de Fromentel, 1874.

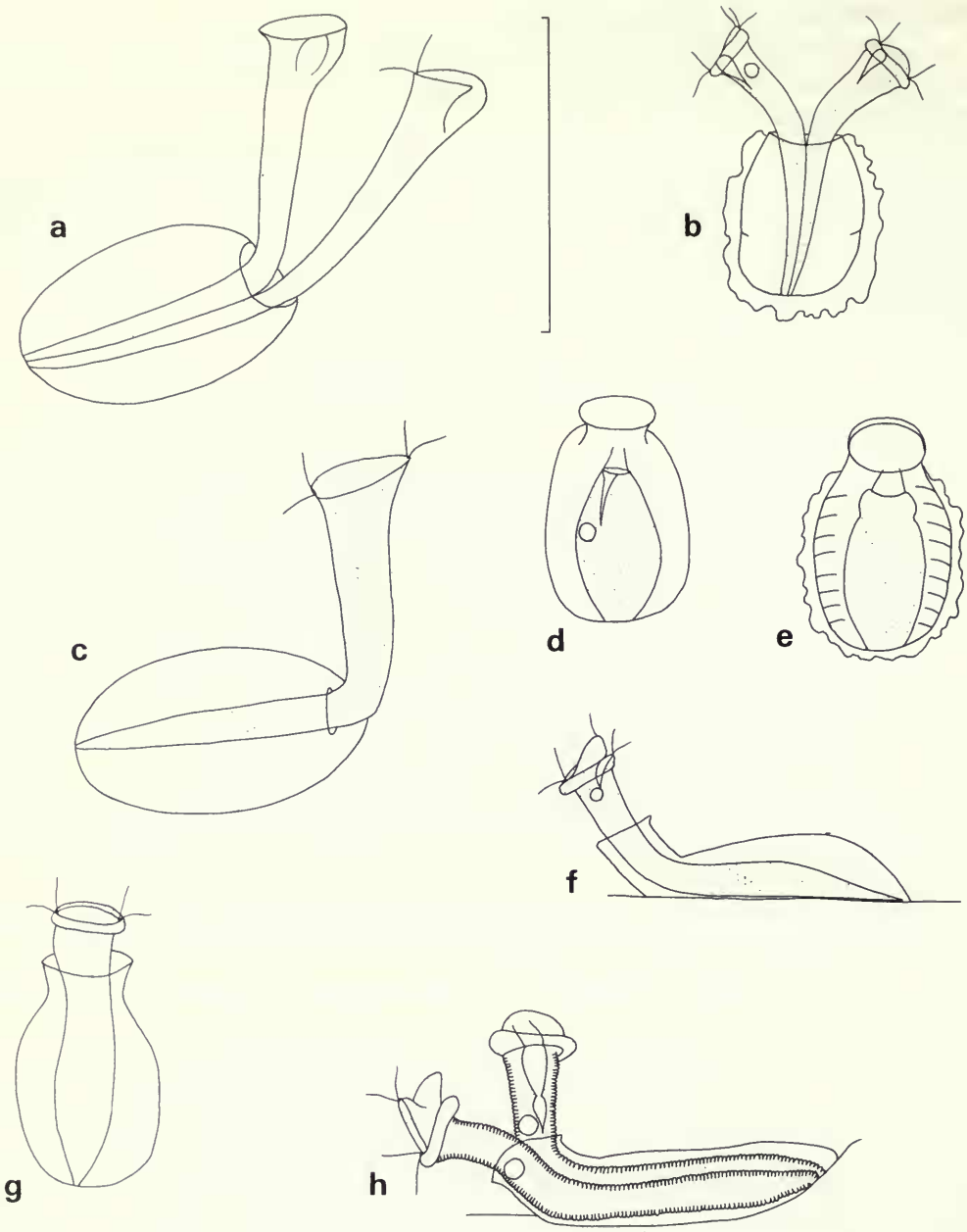

Fig. 7 *Platycola decumbens*, a. dorsal view (after Ehrenberg, 1930); b. (=*P. truncata*) dorsal view (after de Fromentel, 1874); c. dorsal view (after Ehrenberg, 1830); d. (=*P. regularis*) dorsal view (after de Fromentel, 1874); e. (=*P. striata*) dorsal view (after de Fromentel, 1874); f. (=*P. longicollis*) lateral view (after Kent, 1882); g. (=*P. ampulla*) dorsal view (after de Fromentel, 1874); h. (=*P. amphoroides*) lateral view (after Sommer, 1952).

DIAGNOSIS (Fig. 8). The lorica is oval or nearly oval when viewed dorsally and there is a wide border fringe of adhesive cement. The lorica is pale yellow in young cells, becoming brown with age. The neck is short, colourless and slightly constricted at the base. The zooid is large and almost cylindrical though slightly widened at the peristome. When relaxed, it extends well beyond the aperture. The cytoplasm is finely granular but otherwise transparent, there are two contractile vacuoles and the pellicle is finely striated transversely.

Lorica 75 μm long $\times$ 50 μm wide. Neck 10 μm long, aperture 30 μm wide.

SUBSTRATUM. Submerged plants and algae.

HABITAT. Freshwater.

REMARKS. The most distinctive feature of *P. dilatata* is the fact that it has two contractile vacuoles per zooid, a characteristic shared by only one other previously described species, *P. tincta* de Fromentel, 1874. Dons (1922) considered the two to be identical and designated *P. dilatata* the senior synonym. However, Kahl (1935) was of the opinion that Dons (1922) had seen a new species and named it *P. donsi*, but Dons (1940) himself later reversed this decision. Kralik (1961), mainly on the basis of the lorica, regarded *P. dilatata* as synonymous with *P. truncata*. However this is clearly erroneous as *P. truncata* (= *P. decumbens*) has only one contractile vacuole.

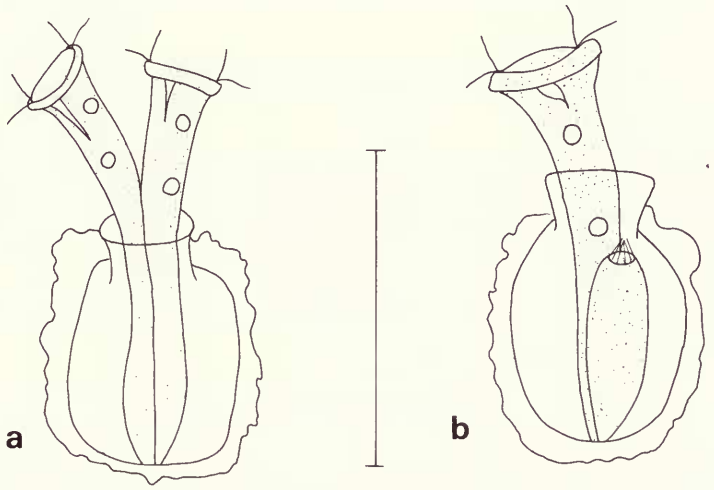

Fig. 8 *Platycola dilatata*, a. dorsal view; b. (= *P. tincta*) dorsal view (after de Fromentel, 1874).

Platycola gracilis de Fromentel, 1874

Vaginicola gracilis de Fromentel, 1874.

DIAGNOSIS (Fig. 9). From the dorsal view, the lorica is somewhat elongated, almost cylindrical, but rounded at the base. The neck is short and also attached to the substratum along its length. The aperture faces upwards slightly. The zooid is broad but fairly short and may reach just beyond the aperture when fully extended. The peristome is wide and the disc is flat and slightly elevated. There is one contractile vacuole just below the peristome and the macronucleus is short, slightly curved and situated longitudinally in the upper 1/3 of the body.

Lorica 60 μm long $\times$ 37 μm wide. Aperture 30 μm wide.

SUBSTRATUM. Submerged plants and algae.

HABITAT. Freshwater in France.

REMARKS. The most distinctive features of this species are its elongated lorica, the wide peristome and the very conspicuous ciliary wreath.

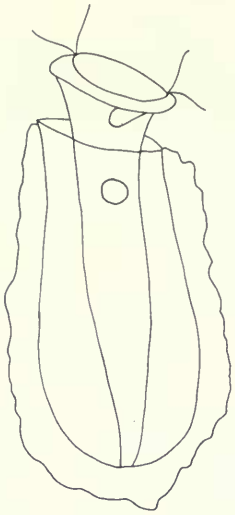

Fig. 9 *Platycola gracilis* dorsal view (after de Fromentel, 1874).

Platycola hydrobiae Hofker, 1940

Vaginicola hydrobiae Hofker, 1940.

DIAGNOSIS (Fig. 10). Viewed dorsally, the yellow lorica is shaped like an elongated ellipse, truncated at the anterior end by the presence of a broad, slit-like aperture. When present, the neck is a simple extension of the lorica and is attached to the substratum. The macronucleus is very short and thick and situated in the upper half of the zooid.

Lorica 85 μm long $\times$ 55 μm wide. Aperture 35 μm wide.

SUBSTRATUM. On *Hydrobia* (Mollusca: Gastropoda).

HABITAT. Marine, found in the North Sea.

REMARKS. *P. hydrobiae* has only been described once and no diagrams showing extended zooids are available. The lorica shape is variable. The most distinctive characters appear to be the aperture, which faces forwards and is not raised off the substratum, and the shape of the macronucleus.

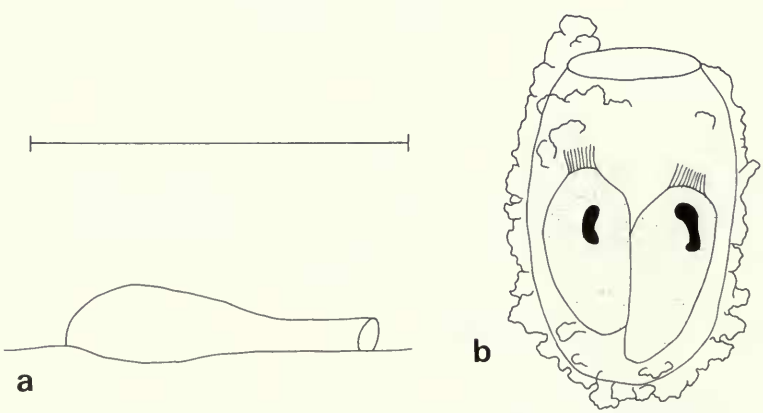

Fig. 10 *Platycola hydrobiae*, a. lateral view; b. dorsal view (after Hofker, 1930).

Platycola lageniformis Hadzi, 1940

DIAGNOSIS (Fig. 11). The lorica is slim and elliptical in shape when viewed dorsally, but slightly rounded at the base. The neck is fairly long and faces upwards, almost at right angles to the substratum, and is slightly constricted at its base. There are usually one or two zooids in each lorica, each with a single contractile vacuole and a long ribbon-like macronucleus.

Lorica 120 μm long $\times$ 50 μm wide. Aperture 20 μm wide.

SUBSTRATUM. Epizooic on the cave-dwelling *Microlistra spinosissima* (Crustacea: Isopoda).

HABITAT. Freshwater in Yugoslavia.

REMARKS. This species was described from a single study made on fixed, contracted specimens. Any judgement on the validity of its rank as a separate species cannot be made until fresh, unfixed specimens have been described.

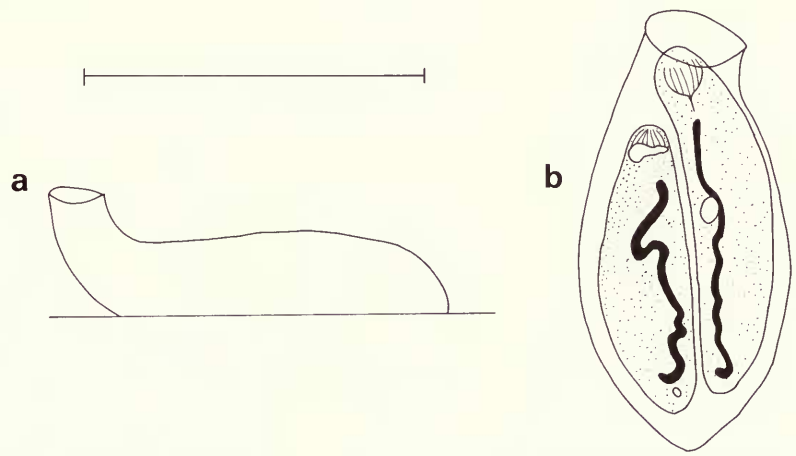

Fig. 11 *Platycola lageniformis*, a. lateral view; b. dorsal view (after Hadzi, 1940).

Platycola mollis de Fromentel, 1874

Vaginicola mollis de Fromentel, 1874.

DIAGNOSIS (Fig. 12). The lorica is colourless to pale yellow, of irregular shape, and about three times longer than it is wide. On one side the neck is a straight continuation of the lorica wall while on the other side, it is sharply constricted. The neck is truncated obliquely by the aperture which faces slightly upwards. The adhesive cement is visible around the lower part of the lorica only. The zooid is short, reaching only as far as the aperture when fully extended. The peristome is wide, with a conspicuous ciliary wreath. The cytoplasm is granular and has one contractile vacuole. In his original description, de Fromentel (1874) describes the pellicle as being 'finely punctate'.

Lorica 100 μm long $\times$ 32 μm wide. Aperture 27 μm wide.

SUBSTRATUM. Submerged plants and algae.

HABITAT. Freshwater in Europe.

REMARKS. This species is characterised by its short zooid and irregular, though distinctive, shape of its lorica.

Platycola pala Swarczwesky, 1930

Vaginicola pala Swarczewsky, 1930.

DIAGNOSIS (Fig. 13). The lorica is colourless and, when viewed dorsally, oval or nearly oval

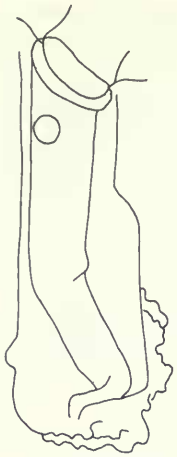

Fig. 12 *Platycola mollis* dorsal view, zooid partly contracted (after de Fromentel, 1874).

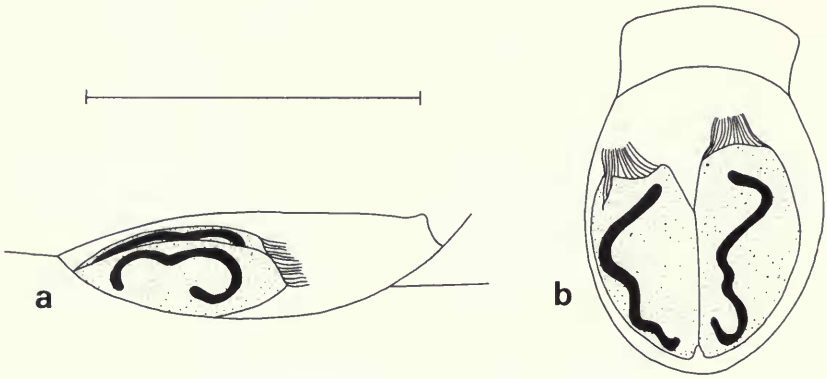

Fig. 13 *Platycola pala*, a. lateral view; b. dorsal view (after Swarczewsky, 1930).

in shape. From the lateral aspect, the convex dorsal wall has a low elevation while the ventral wall lies depressed into its substratum. The neck is a simple continuation of the ventral wall which extends forwards and upwards beyond the dorsal wall to form a platform (Fig. 13a). The macronucleus is long, thin and coiled with its ends turned back.

Lorica 87–97 μm long $\times$ 30–70 μm wide. Neck 16 μm long $\times$ 50 μm wide at the aperture.

SUBSTRATUM. Epizooic on *Parapallesa pazill* (Crustacea: Amphipoda).

HABITAT. Freshwater in Lake Baikal.

REMARKS. This species has been described on a single occasion and no diagram of extended zooids are available. Its most distinctive characters are that it lies depressed in its substrate, and that the neck is formed by the lower wall only.

Platycola steineri Penard, 1914

Vaginicola steineri Penard, 1914.

DIAGNOSIS (Fig. 14). When observed from above, the lorica is slim, elliptical, and slightly rounded at its base. A lateral view shows that the rear half of the lorica is raised and has a trough-like depression running longitudinally down its centre (see Fig. 14a). The neck is short and raised with a well defined aperture, which is elliptical or reniform, and faces

upwards. The zooid extends well beyond the aperture when relaxed. The disc is wide, flat and protrudes obliquely above the peristome. The pellicle is finely striated transversely. There is one contractile vacuole situated just below the peristome lip, the macronucleus is straight and lies longitudinally in the zooid.

Lorica 78–88 μm long $\times$ 40 μm wide. Zooid 100–118 μm long. Macronucleus 25–29 μm long.

SUBSTRATUM. Moss.

HABITAT. Freshwater in Switzerland.

REMARKS. This species may be most easily identified by its distinctive lorica profile, striated zooid and long, straight macronucleus.

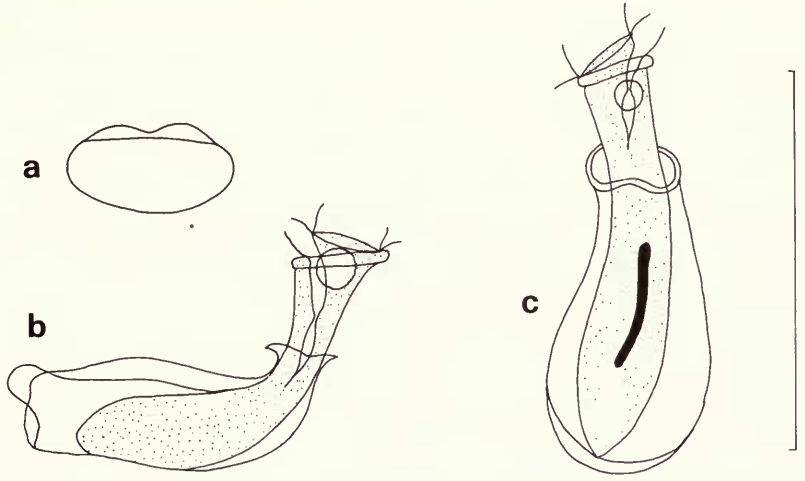

Fig. 14 *Platycola steineri*, a. posterior view of lorica; b. lateral view; c. dorsal view (after Penard, 1914).

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